

THE CHALLENGES OF MODELING AND ANALYZING STABILITY OPERATIONS

BY

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USAWC STRATEGY RESEARCH PROJECT

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ABSTRACT

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This project analyzes the ongoing debate on how the Army will change to meet the current and projected world environment challenges in force structure and fighting doctrine. Second, it will synopsise the significant challenges associated with integrating stability operations into Army doctrine, operations, and force structure. Third, this study will examine the current challenges that the analytical community is now facing associated with analyzing stability operations and the impact the current analytical shortfall across the analytical community and their ability to provide meaningful analysis to solve very difficult problems pertaining to force structure, strategy, and a host of other defense challenges. To illustrate these challenges in the analytical community this paper will review several key events that defined the modeling and simulations challenges and will assess a recent study conducted by the Army Training and Doctrine Command (TRADOC) Analysis Center (TRAC) addressing modeling, methodology, and analytical shortfalls related to stability operations. Finally, the study will recommend for consideration by the analytical community future investment strategies.

THE CHALLENGES OF MODELING AND ANALYZING STABILITY OPERATIONS

During the unveiling ceremony of the Army's new stability operations manual, Field Manual (FM) 3-07, *Stability Operations*¹ at the 2008 meeting of the Association of the United States Army (AUSA) in Washington D.C., General William S. Wallace, the Commander of the US Army Training and Doctrine Command, stated that "We recognize that in a contemporary operational environment in the 21st Century, conventional military operations, offensive and defensive, will be conducted simultaneously with stability operations."² However, this concept is not new given our operational experience of the last several years that has forced the Army to modernize and update its prevailing doctrine, although some critics saw this as a 'little too late'. During the new release of the cornerstone field manual FM 3-0, *Operations*, Lieutenant General William Caldwell touted it as a doctrine that "has a combination of 'evolutionary' and 'revolutionary' concepts. Much of the doctrine may be evolutionary, while its impact on the force and the application of the doctrine will be revolutionary."³ He went on to say that the "revolutionary attributes" are that stability operations have been made co-equal to offense and defensive operations, and that stability operations are now a "core mission of the Army"⁴. Again, is this really news, or merely an acknowledgement of current realities as well as a less-than speedy acceptance of yesterday's wars?

In the last three years of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) the Army, at the direction of the Bush Administration, gradually became involved in leading stability operations. Nevertheless, has the Army *really* changed its perspective on integrating stability concepts in all aspects of the force, or is this yet again part of a pendulum swing towards reluctant acceptance one day and denial and

rejection the next? If so, is the Army leadership poised to make this change effective, lasting, and most importantly, for the right reasons? In support of these institutional decisions, is the analytical community poised with the proper tools, data, and methodologies required to support the upcoming decisions on force structure, roles, and missions?

This project analyzes the ongoing debate on how the Army will change to meet the current and projected world environment's challenges in force structure and fighting doctrine. Second, this study will synopsise the significant challenges associated with integrating stability operations into Army doctrine, operations, and force structure. Third, this study will examine the current challenges that the analytical community is now facing associated with analyzing stability operations, and the impact the current analytical shortfall across the analytical community and their ability to provide meaningful analysis to solve very difficult problems pertaining to force structure, strategy, and a host of other defense challenges. To illustrate these challenges in the analytical community this paper will review several key events that defined the modeling and simulations challenges and will assess a recent study conducted by the Army Training and Doctrine Command (TRADOC) Analysis Center (TRAC) addressing modeling, methodology, and analytical shortfalls related to stability operations. Finally, recommendations will be offered to the analytical community focused on future investment strategies.

The Current Debate

With the fall of the Soviet Union, the United States quickly found itself confronting a very complex world and involved in a variety of operations other than war. To be

exact, since 1993 the country is recorded to have been involved in over 170 separate small scale contingencies.⁵ Nevertheless, once our nation committed soldiers to OEF and OIF the Army realized it was ill suited for 'stability type' operations essential to policy success. But as late as 2005 Army researchers noted that "... there has been an underlying reluctance in the Army to embrace stability missions in full and to accept them as truly central to a professional army's core area of expertise. Rather, there is an eagerness to be done with them and return to a focus on combat operations."⁶ This position is supported by other scholars, like Andrew F. Krepinevich, who has "concerns that the Army, for so long oriented on conventional warfare, may not embrace the new doctrine" when addressing the FM 3-0 concepts of the equally weighing stability or civil support tasks with those of offense and defensive operations.⁷

The Army Strategy of August, 2008 provides some insights beyond statements in doctrine that may divulge where the Army is headed in an environment of 'persistent conflict'⁸. In fact, the "*Strategy*" addressed key "strategic questions" pertaining to the topic of stability operations and outlines the "strategic choices" of choosing a force mix for either "High Intensity or Irregular Warfare Capabilities."⁹ The answer, in simple terms, was that the Army will invest its future force increases into the force modularity program by building six new Infantry Brigade Combat Teams (IBCT) and not changing/adding any support-type brigade units, the types of units that would lend value (arguably) in stability type operations.¹⁰ Using the old phrase 'put your money where your mouth is', it appears the Army will only build more fighting units with the force end-strength increase of 65,000 soldiers in Fiscal Year 2010.¹¹ Thus, there may be some truth to Frederick Kagan and Thomas Donnelly's research when they stated that this

“reflects the service’s hollow commitment to sustained stability operations without immediate and heavy resort to reserve component forces.”¹²

As Richard Haass stated over nine years ago, “the United States can do anything, just not everything. The need to choose remains inescapable. Questions of whether to intervene, as well as how, remain central.”¹³ Accordingly, our nation has struggled with this question for over a decade, but must soon come to a crossroad and decide. Most recently, Andrew J Bacevich wrote that there “has been the beginning of a Great Debate of sorts” of opposing views that our Army is either training and building force structure to fight our last war (i.e. Operation Iraqi Freedom and Operation Enduring Freedom) or is correctly preparing to fight and win our next war.¹⁴ The debate about stability operations pits what Bacevich termed “Crusaders vs. Conservatives” where the Crusaders and supporters of what he calls the new ‘Patraeus Doctrine’ believe in the current emphasis on stability operations and our nation having the required capabilities to fight counterinsurgencies. On the other hand, Conservatives view the emphasis, according to Richard Haass, as “an infatuation with stability operations [that] will lead the Army to reinvent itself as ‘a constabulary,’ adept perhaps at nation-building but short of adequate capacity for conventional war-fighting.”¹⁵ Finally there is a third category of “others” who, from either the Crusader point of view or from a Conservative perspective, are pandering too much to one position and not doing enough to support their own views. We are reminded by Peter Katel that this type of argument between the two camps is not new and dates back to the Kennedy Administration. However, this disagreement remains very relevant to today’s issues.¹⁶

“Crusaders” like Francis Fukuyama would argue that “.... whether for reasons of human rights or of security, the United States has done a lot of intervening over the past fifteen years, and has taken on roughly one new nation-building commitment every other year since the end of the Cold War. We have been in denial about it, but we are in this business for the long haul. We'd better get used to it, and learn how to do it- because there will almost certainly be a next time.”¹⁷ A leading proponent for change within our defense establishment is John Nagel. A retired Army lieutenant colonel combat veteran and Rhodes Scholar with a Ph.D. from Oxford, he believes the military is not doing enough to address the current asymmetrical threat faces today. He believes the Army should build a permanent Army Advisory Command and believes it is “irresponsible to devalue irregular warfare adaptations needed on the battlefield today in favor of other capabilities that might be useful in a hypothetical conflict later.”¹⁸ There is supporting thought of revitalizing the concept of forming military assistance advisor groups (MAAGs), once the backbone of theater engagement dating back to post World War II periods, and of realigning their command and control back to the Department of State.¹⁹ However, these notions were marginalized during a recent interview with the Army Chief of Staff, General George W. Casey. Jr., where he balked at the idea of building a new “advisory corps” and implied that the expanded Special Forces capability would instead suffice with occasional augmentation from regionally-oriented conventional forces.²⁰ Furthermore, General Casey is further convinced the current “full Spectrum capable” force can meet defense needs, as espoused in current operational doctrine.²¹ This concept is supported by such intellectuals as Frank G. Hoffman where he warns, in the age of ‘Hybrid Wars’, that it would be a mistake for “increased

specialization or bifurcation of the US military to improve its ability to conduct non-traditional missions, especially post-conflict stability and reconstruction tasks.”²²

However, as Andrew Krepinevich notes, this concepts of 'putting the Army's structure eggs' in one 'BCT basket'" gives many military experts cause for concern.²³ This includes the Secretary of Defense as well when he noted that “one of the enduring issues the military struggles with is whether formations and units organized, trained, and equipped to destroy enemies can be adapted well enough and fast enough to dissuade or co-opt them -- or, more significant, to build the capacity of local security forces to do the dissuading and destroying.”²⁴

To complicate this ongoing debate, there are additional thoughts that the Army should build separate, specialized counterinsurgency brigades under which the Brigade Combat Teams (BCT's) are explicitly equipped, organized, and trained to meet the intricate challenges of fighting counterinsurgencies.²⁵ Furthermore, others such as Brian Watson argue that the Army “must have a robust force pool comprised of modular and scalable combat support and service support units that can be tailored rapidly under multifunctional battalion and brigade headquarters and integrated into operations as coherent force packages.”²⁶

In contrast to the differing views of the “Crusaders”, the “Conservatives” like Colonel Gian Gentile complain that “the Army's new counterinsurgency manual, Field Manual 3-24..... has had a trance-like effect on policymakers, members of the military, and numerous other opinion makers.”²⁷ Accordingly, Conservatives believe we should go back to our basics of conventional war fighting espoused under Powell Doctrine whereby the U.S. only commits forces to wars of the utmost importance to the nation,

and only after ensuring overwhelming combat power. Furthermore, there is a concern by critics of the Patraeus Doctrine that nation building is quickly becoming the core function of the Army and that there are implications that the Army will transform into a light constabulary force intended for policing the world riddled with unstable nations.²⁸ Other scholars like Michael Mazarr warn that “redirecting U.S. military forces substantially toward asymmetric threats is misguided” due to the propensity decision makers to then get involved in conflicts that are counterproductive to the US that, in turn, would undermine the primary role of the US military of deterring and responding to major conventional threats.²⁹

However, Phillip Meilinger notes that common to both schools of thought, is an acknowledgement that military forces have “the tendency to regard battle as an end in itself, to see annihilation of the enemy as a desirable goal, and for military commanders to be blind, or at least naïve, to anything on a plane higher than the tactical level of war, is no longer viable.”³⁰ The United States has discovered that, (according to Haass) when confronted with the decision to conduct major combat operations in a sovereign country, that “intervening too often poses an obvious danger. Any government indulging in what might be described as wanton uses of force would be guilty of acting irresponsibly, particularly toward those in uniform.”³¹ With our nations ongoing wars having entered the seven year mark, the country has quickly learned that that there is a price to pay whereby U.S. means are necessarily limited and that there will always be more interests to protect than resources to protect them.³²

The military, and the nation for that matter, are challenged to maintain a balance between the combat and stability roles played by the Department of Defense (DoD) in

achieving national security objectives.³³ As a result, senior decision makers are left with making crucial decisions between these two competing camps. Therefore, it is increasingly important as DoD faces the Quadrennial Defense Review (QDR) beginning in 2009 under the shadow of pending budget cuts and it is up to the analytical community, in large measure, to help guide the decision makers resolving in with these important strategic questions. However, the analytical community as a whole has been undergoing its own challenges. In general, the community currently lacks many of the vetted tools and techniques in analysis of conventional warfighting for use in stability operations and Irregular Warfare areas.

Challenges with Current DoD Analytical Methods and Tools

With the advent and publication of DoD Directive (DoDD) 3000.05, *Military Support for Stability, Security, Transition, and Reconstruction (SSTR) Operations* in November of 2005, the Secretary of Defense gave definitive guidance to the military on increasing levels of preparedness for conducting stability operations when called on.³⁴ With this document the Defense Department made it clear to the services that stability operations were now a core US military mission, that the military must be prepared and ready to conduct them, and that the priority for such missions was comparable that of to combat operations. It further directed selected Office of the Secretary of Defense (OSD) staffs to establish programs and measures of effectiveness for success and to expand research, development and acquisition of 'robust' stability operations capabilities. However, the Department of Defense on the whole has found this to be very challenging.

With the recent publication of DoDD 3000.07 *Irregular Warfare (IW)* in December of 2008, DoD formally recognized IW as a strategically important form of warfare equal to traditional warfare, whereby IW involves a number of activities and operations to include stability operations.³⁵ To avoid a detailed discussion and debate on the nuances and difference between IW and SO, it is reasonable to state that many of the analytical challenges for both IW and SO are very close, if not the same.³⁶ From an analytical perspective DoDD 3000.07 clarified roles for OSD staffs to develop modeling and simulation capabilities for human networks, and specifically identified the Director of Program Analysis & Evaluation (PAE) in coordination with DoD Components and the Chairman of the Joint Chiefs of Staff to “manage the development and use of appropriate analytical models, tools, and data to support the analysis of the U.S. Armed Forces for IW.”³⁷ Though OSD-PAE and the other DoD Components (to include the Army) have had a head start on this effort, the overall, analytical challenges are still there. As pointed out by the Secretary of Defense, Robert Gates recently noted, “war is inevitably tragic, inefficient, and uncertain, and it is important to be skeptical of systems analyses, computer models, game theories, or doctrines that suggest otherwise.”³⁸

James Clancy and Chuck Crossett expressed concern with current analytical methods when they wrote in *Parameters*, that “One worrisome consequence is that the decisions on which the United States bases equipment acquisition and constructs operational planning over the next decade are dependent upon traditional warfare-style analysis. Our tools, models, and even the methodologies for assessing success are biased toward measuring physical effects on near-peer forces, played out over the days or months of a maneuver and attrition campaign.”³⁹ In addition, they point out that

analysts are overcome by the overwhelming amounts of raw data, which given the lack of an analytical framework, makes them unable to interpret success or failure. An 'analytical framework' is best described, in scientific terms, as a conceptual system of definitions and classifications of associated data whereby the combination of a selected scheme (or methodology) of defining a problem/ along with a conceptual framework of related data may describe causality or association.⁴⁰ A good example of differing 'frameworks' is provided by Clancy and Crossett in which they describe the divergent opinions of 'technologists' over 'strategist' relating to the casualty of data associated with improvised explosive devices. While the technologists want to explain the changes in data is due to technology advances, the strategists or policy analyst, in contrast, want to explain the phenomena due to changes in friendly tactics and procedures, or perhaps changes in enemy behavior.⁴¹ Furthermore, they rightly point out that the analytical community must learn how to measure and assess the effectiveness of insurgencies and IW, and if done within a framework such new MOEs may guide new models and simulations desired for future decision making.⁴² Some analyst in the 'community' were initially aware of this shortcoming with the onset of 9/11⁴³; however, it would take some time before the analytical community as a collective body would start to understand and appreciate this deficit and work towards solving this apparent analytical capability gap.

With the start of OEF and the insurgency phase of OIF, analytical communities such as the Military Operations Research Society (MORS) gradually started to realize that the existing tools and methods were unable to solve many of the non-kinetic/non-attribution problems that the military was starting to face. It is fair to state that though not all military analysts are members of MORS or participate at the frequent gatherings, the

group as a whole did (and continues to do) a fair job of representing the community's views. As early as 2002 the President of the "Military Applications Society", (a sub group within MORS), wrote to the analytical community warning "if our profession cannot provide timely, rational, and defensible insight into new and ill-poised problems we will suffer the fate of the irrelevant."⁴⁴ During 2003 and 2004, a growing amount of the analytical community began to discuss and recognize that the existing models and methods, to include a lack of data, were real problems that prevented analysts from being able to support the decision maker's needs.⁴⁵ However, it wasn't until the end of 2004 before the analytical community, via a MORS workshop, collectively organized and gathered a group of 160 leading analyst with the assertion that "recent experiences in providing analytic support to the combatant commanders in the prosecution of the GWOT have brought to the fore several areas that are of major importance and interest to the warfighter."⁴⁶

It was at this workshop on "The Global War on Terrorism: Analytical Support, Tools, and Metrics of Assessment" that the group took a close look at analytical methods related to stability operations. One of six working groups titled "Analytic Support to Stability and Transition Operations" looked at challenges and pitfalls associated with (then) "Phase IV" operations. Among the working groups findings were an agreement that while various models existed and where there was a diversity of analytical requirements for stability operations, there was no single model to meet all analytical demands.⁴⁷ The group also noted that the difficulties of knowing when phases change, the associated challenges of factoring in Intergovernmental Organizations (IGO) and Nongovernmental Organizations (NGO) objectives, and of overlooking host

nation capabilities. The working group's recommendations did not amount to much more than expressing concerns about deployed analysts having database skills or having dialogs with analysts in other government agencies. Nevertheless, for the overall workshop findings, there was recognition of the need for better 'center of gravity' analysis of our enemy.⁴⁸ However, the realization of the true analytical challenges facing stability operations would not come until a year later.

As conditions worsened in Iraq during 2005 the Army forced to come to terms with numerous challenges of fighting two counterinsurgencies while simultaneously conducting nation building activities. As could be expected the analytical community was called upon to look further into helping solve or explain many of the associated obstacles. MORS assembled yet another Workshop in October 2005 under the title 'Agent-Based Models and Other Analytic Tools in Support of Stability Operations'.⁴⁹ It was then that the workshop members came to terms with their lack of skill sets and tools needed to answer questions that were never asked of them in the past or had been lost in past discussions. The workshop members broke down to sub groups and looked at simulation and models, metrics, and analytic support for SO. The group soon realized "a critical failing was that many agencies were conducting military, civilian, and multi-national analyses independently without cross-domain sharing of ideas and methods."⁵⁰ The collection of experienced analysts also discovered that metrics dealing with SO were unique for each operation, were difficult to define, and even more difficult to collect data on. Through self-discovery they also realized that the "culture of analysis" for SO is different outside the military circles and declared that "that military operations research analysts should become more adept at analysis techniques used outside of

traditional military operations research, especially for stability operations.”⁵¹ This was a departure from conventional thinking and paved the way towards a more open and humbling period for the analytical community who in the past were always counted on to provide answers to difficult questions with a high degree of certainty.

Prior to the fall 2005 MORS Workshop and through the summer of 2006 the analytical community was under intense pressure to answer numerous questions associated with the ongoing Quadrennial Defense Review (QDR): as mandated by Congress, and administered and controlled by DoD. Questions and debates regarding strategy, manpower, force structure, and other programmatic and acquisition decisions were never ending during this timeframe. To help frame the issues and better understand the QDR guidance for future analysis, in February 2006 MORS Workshop held another workshop focused on the ‘Analysis for Non-Traditional Security Challenges: Methods and Tools.’⁵² The central focus of this gathering was on the four strategic ‘challenges’ of (traditional, irregular, catastrophic, and disruptive) as outlined in the National Defense Strategy (NDS) of 2005⁵³, and addressed in the ‘quad chart’ of the final QDR Report published one month prior to the workshop.⁵⁴ It was here that the analytical community came to terms that the “familiar physics-based existing suite of tools were not well suited to examine the capabilities of the Joint Force against new challenges.”⁵⁵ The workshop, attended by some of the most senior ranking analysts from the services (the Joint Staff) OSD, set out to frame and then define five major challenges for the defense analytical community to work on. Of those, two pertained directly to IW and SO analytic advancements: 1) the development of analytical methodologies to assess and investigate non-traditional warfare and 2) developing a

listing of the gaps in tools and methodologies for further development within the analytical research community. From the workshop report the group acknowledging that “when confronted with IW/GWOT, a purely physical science model for gaining insight begins to break down very quickly. This means we may have to admit that not everything falls into the category of things that are amenable to the approaches taken by the physical sciences. Secondly, we may need to manage risk associated with making decisions about processes that are not amenable to “scientific” methods.”⁵⁶ From the group’s findings they acknowledge the value of emerging (and unproven) technologies such as agent based modeling, systems dynamics methods, and quantitative computational social sciences, but recommended a ‘best of breed’ approach to further research and develop their potential. Furthermore, senior analysts recommended further expanding analytical methods such as board games, wargames, and simulations at varying degrees of fidelity in order to address IW/GWOT problems. In the workshop’s concluding remarks, the collective body that was largely comprised of mathematicians, physicists, ORs, engineers and scientists acknowledged that they would “need to be augmented by other disciplines such as sociology, anthropology, regional experts, economy, political science, and psychology.”⁵⁷ This was unprecedented for the time given the invisible wall between the ‘hard’ and ‘soft’ science fields.

By now it was clear that the analytical community was working hard towards solving some very difficult problems in addressing IW/GOWT implications in terms of strategy, force structure, manpower, and crucial acquisition decisions. But given the known constraints at that time (e.g. lack of analytical frameworks, models, data, etc.),

the community fell short. As noted on the Government Accounting Office (GAO) report/investigation of the QDR.⁵⁸ The report identified three key shortfalls and all three were related to flaws in analysis. The first shortfall was the lack of “a comprehensive, integrated assessment of different options for organizing and sizing its forces to provide needed capabilities.”⁵⁹ Second, they noted that “DOD did not provide a clear analytical basis for its conclusion that it had the appropriate number of personnel to meet current and projected demands.”⁶⁰ The third shortfall also fell heavily on the analytical community given DoD did not develop the required tools to measure risk. Thus, the finding of the GAO was another wake-up call for the analytical community. However, in, the defense of the analytical community of DoD at large, they understood it would take years if not decades to develop the tools and methodologies needed. This was also apparent to the Army’s analytical community which conducted their own independent assessment of their capabilities.

Challenges with Current Army Analytical Methods and Tools

In the summer of 2006 the Army Training and Doctrine Command Analysis Center (TRAC) – Ft. Leavenworth began two studies to look at different aspects of stability operations. The first study, under the title of “Stability Operations Capability Gap Analysis,” looked at the Army’s current *capability* gap in order to identify tactical and operational SO tasks and missions that Army could not conduct.⁶¹ The study’s findings, coupled with a sequential study conducted by the Army Center for Army Analysis (CAA) looking at *capacity* gaps for SO, was part of a larger Army effort to assess strategic capabilities and capacities to perform SO tasks in a number of different environments.⁶² At the same time, TRAC started their own study entitled “Methodologies, Models, and

Simulations Research for the Analysis of Stability Operations” in order to determine working and usable models, methodologies, and simulations to support analysis of SO.⁶³ This later study was a clear indication that the Army was serious about looking at their analytical capabilities, or lack thereof, regarding SO. According to the report written by Kerry Lenninger, the studies were intended “to assess whether methodologies, models, and simulation (MM&S) provided appropriate functionality and utility over an analytic space representative of an Army corps and its divisions conducting stability operations in a Joint, interagency, and multinational environment ...”⁶⁴ The final TRAC-Ft. Leavenworth study was constrained due to limited responses from those surveyed and due to the fact the study group had limited experience and insight with the models and simulations recorded in the surveys. In addition, a full verification, validation, and accreditation (VV&A) was infeasible due to time and budget constraints. The study team was able to screen 30 MM&S during their research and, after receiving limited feedback, ended up evaluating/scoring 19 of them. The team then conducted a functionality appraisal of the methodologies, models, and simulation that was also limited by the lack of a contextual background or application (i.e. the team lacked an understanding of how the MM&S would be applied to a select set of problems).⁶⁵ The end result of the study was a good start for the Army, but was lacking completeness and devoid of a plan to move forward. In all, the TRAC leadership most likely understood they would need a more in-depth follow-on study that addressed the shortfalls in data and better understood the underlying science and accuracy of the models studied. Lastly, the TRAC leadership understood the need to better pinpoint the analytical gaps in terms of IW and SO, and ensure the entire DoD analytical community was surveyed.

In 2007 – 2008, TRAC-Leavenworth conducted another study focused on MM&S gaps that was much broader than just Army concerns, and focused on mitigating identified shortfalls within DoD. The study lead formed the “Irregular Warfare Methods, Modeling & Analysis Working Group (IW MmAWG)” with the following purpose: (1) determine the DoD analytical communities ability to support decisions regarding organizations, equipment, and the employment of ground forces in an IW environment, (2) identify the gaps in DoD IW analytical capabilities complimented with recommendations on closing the gaps over time, and (3) inform an analytical campaign plan in order to advance the analytical community if DoD regarding IW matters.⁶⁶ The study team comprised of analysts and IW Subject Matter Experts (SMEs) participating as either working teams, sponsors, advisors, and stakeholder reviewers from across all services, the joint staff, and OSD all worked collectively to get the analytical community moving forward. Though constrained by limited information due to sensitivities and propriety concerns, the study team did an extraordinary job in outlining a systematic (and traceable) approach to defining the problem and laying out an investment strategy. They began by defining 160 varying ‘decision issues’ and then binned them into 14 decision issue categories ranging from ‘battlespace awareness’ to ‘training’.⁶⁷ Similarly, the analyst defined 56 ‘analytic functional areas’ necessary to address the question “What elements of the IW environment must the analysis account for to credibly answer the decision issues in this category?” and assessed each within a framework of the physical environment (terrain, infrastructure, local government, actors, etc.), friendly forces, and threat forces⁶⁸ Once compiled the study team cross-walked the 160 decision issues with the analytic function areas in order to validate their assessment framework

and trace each framework to the decision issues. Meanwhile, a separate team compiled and investigated 23 identified MM&S across DoD that were related in at least one of the many aspects of IW.

Using this list of tools the study team then culled out analytical functional areas supported by existing tools and were left with a list of 35 analytic functional areas (later titled 'analytic capability gaps' in the study) that were either only partially supported by existing tools or, in many cases, not supported at all. Using a risk methodology of matching the severity of the gap against the probability of occurrence the team was able to identify the analytic capability gaps that ranged from extremely high risk or medium risk (as defined in FM 5-19, *Composite Risk Management*).⁶⁹ These risk results were surprising in terms of analytical gap impacts as related to the degree of impact across mission capability, readiness, combat power, etc. For example, of the 35 gaps, there were 34 gaps attributable to a lack of data with 17 of them falling in the highest risk category. Additionally, 20 of them were attributable to the "soft science" or behavioral field of science, and of these 14 were categorized in the highest risk level.⁷⁰ Doing a cost-benefit assessment of the 35 gaps, the team identified 17 as "High+" needing a "long term solution required that begins with fundamental research" and at a cost to exceed \$1M or four professional staff years.⁷¹ The cost-benefit analysis also identified five 'low-hanging fruit' analytic capability gaps relatively cheap in funding or man-years that were less or equal to \$240K or 1 man-year.

In the final study's general findings and recommendation the team produced several topics that were worthy of further deliberation. The team concluded that "the best available solution to these gaps in the short term is through a human-in-the-loop

(HITL) analysis venue (e.g. wargaming) with qualified SMEs to provide data and adjudicate event outcomes.”⁷² Their findings of emphasizing wargaming techniques also corresponded with the February 2006 MORS Workshop and were compatible to a separate MORS workshop in December, 2007 that also reinforced the solution of wargaming methodologies in order to advance analytical understanding of IW and SO.⁷³ The findings also acknowledged that though there was a substantial amount of resources from commercial, academic, and DoD sectors now focused on modeling the IW environment and “problem space”, the efforts were not synchronized, consistent programs. Furthermore, in this ‘best of breeds environment’ there was no development of strategy let alone no reasonable way to validate or verify the models that exist or are currently under development. The recommendations made a genuine and valid petition for the Army senior leadership to (1) establish an Army enterprise data collection program, (2) institute a Senior Board to guide development of an IW assessment capability, (3) select a small set of the most promising IW models to grow and mature over time, (4) assign and resource a TRADOC organization responsible to provide authoritative human behavior data, and (5) utilize “wargame” methods, in the short term, to mitigate existing modeling gaps.⁷⁴ Although these recommendations are absolutely on target, they don’t go far enough.⁷⁵

Most importantly, recent TRAC efforts were not done in a vacuum. Other leading analytical institutions supporting the other services, the joint staff, and elements of OSD were all struggling with the same issues of how to support Irregular Warfare analysis with SO, COIN, and a number of other challenges contained within the ‘family’ of larger IW problems. Leading organizations such as the Center for Army Analysis, USMC

Center For Irregular Warfare, Office of the Secretary of Defense, Program Analysis and Evaluation (OSD-PAE), and US Special Operations Command are just a few of the many agencies focused on the analytical challenges associated with IW. However, there are yet additional measures that the analytic community as a whole must take to organize and plan for success.

Recommendations

The Army should fully and enthusiastically implement the recommendation addressed in the Irregular Warfare Methods, Modeling & Analysis Working Group Report. However, this endeavor would be extremely expensive, time consuming, and might not entirely be a singularly Army effort. Given the expansive nature of IW challenges and the importance accorded IW across the entire domain of DoD and other government agencies that either directly or indirectly support US efforts in Iraq and Afghanistan, the entire defense community should act aggressively on several of the recommendations regarding MM&A.

First, the Office of the Secretary of Defense (OSD) should manage and coordinate investment strategies for and fund where appropriate the analytical models and data collection for IW tools that cross service boundaries. According to 2DoDD 3000.07 published in December 2008, the Director of Program Analysis & Evaluation (PAE) is responsible for this extensive and costly challenge.⁷⁶ Provided that the DoDD is relatively new, a concerted and focused effort by DoD agencies and services of supporting OSD's role and responsibility will, in the long run, save time, effort, and expenditures of limited resources. For example, if the Army understood that the Marine Corps was funded and responsible to develop knowledge, data and algorithms

accounting for the behavior of actors (e.g. civilian population, religious leaders) based on their level of support for the existing government, the Army could focus its efforts and resources on other analytic capability gaps.⁷⁷

Second, OSD, should immediately establish a consortium among defense, academic, and industry stakeholders in order to streamline future efforts and prevent redundant and wasteful spending. There is an abundant amount of ongoing analyses conducted independently without sufficient cross-domain sharing of ideas. The key to success will be knowledge fusion and not further knowledge gathering without a specified directed focus. This was evident with the TRAC-Ft. Leavenworth study that pointed out that DoD, commercial, and academic sector resources were all focused on modeling the IW environment, but their efforts were not synchronized. While DoD agencies struggle with IW analytics in coming years, creating an analytic consortium will guide and focus a number of investigative endeavors in order to ensure common data goals and standards are used and enforced thus, making the data collected and analyzed available and useful to a larger audience. In addition, with limited budgets, a consortium would facilitate an equitable and fair cost/burden sharing among all DoD agencies which may all be struggling to develop and use tools that are very similar in design and purpose.

Third, for future stability operations research effort, DoD analytic organizations should establish a use a single framework such as the Interagency Conflict Assessment Framework (ICAF)⁷⁸ to support ongoing research. Provided that the ICAF is intended to facilitate a shared interagency understanding among numerous DoD and non-DoD agencies for systematically analyzing the factors of conflict, a supporting analytical

network would allow a complimentary effort among military elements to support both current and future analysis. By focusing on the ICAF which is reliant on social ‘soft’ science expertise we can bridge the gap with the analytical community currently dominated by mathematicians, engineers, operations research analyst, and other hard science analysts addressed earlier. Thus, it would serve as a method to communicate analytical gaps with civil and military tools and techniques under development and will help breach the 20 critical analytic capability gaps identified in the TRAC-Ft. Leavenworth study.⁷⁹

Fourth, the DoD analytical community should further advance and acknowledge wargaming as a viable interim analytical tool for analysis. Though methods of wargaming may draw controversy from the ‘hard science’ community in scientific and quantitative areas, wargaming methods do prove useful when considering complex situations and decisions.⁸⁰ The acknowledgement by the analytical community of the value of wargames, as addressed earlier, is a generally accepted concept as seen in the TRAC-Leavenworth study. As Lieutenant General Thomas Metz, the Deputy Commanding General of TRADOC, noted in 2007 “wargaming plays an important role in refining ideas into military concepts.”⁸¹ Though the analytical community has integrated wargaming into several conferences and working groups, there should be a greater emphasis on this growing field which leverages human analysis to compliment quantitative methods. The analytical community must act immediately by integrating gaming as a recognized platform during their annual MORS Symposium.

Conclusion

Though deciding on force structure is very difficult, it appears that the Army continues to struggle with fully embracing the concepts of SO and IW beyond doctrinal changes and to move past a singular focus of more traditional conventional warfighting. While the Army currently pursues the building and training of a “Full Spectrum Force”, the debate continues between the ‘Crusaders’ and ‘Conservatives’ with little (apparent) involvement and impact from the analytical professionals. Though building force structure for an uncertain environment is an incredibly difficult task, a strong analytical community sustained by firmly based, well integrated and acceptable analytical tools and methods could and must join this discussion to help decision makers overcome some of the uncertainty. From an analytical perspective, James Clancy and Chuck Crossett noted that “the analysts of World War II faced a similar challenge [of] having to create a mathematical underpinning for the physical effects of war.” While the challenges facing the analytical community are not new, “operational analysts have only begun to establish the [framework and] knowledge set necessary to have any chance of assessing operational effectiveness in an environment dominated by irregular warfare.”⁸² However, provided the analytical community continues to collectively focus efforts and implement recommendations like those summarized here, the community may be able to adapt and influence the right choices in the near term. In all, stability operations are not yet fully part of the long range picture for the Army, and as forces return from Iraq and Afghanistan in the not so distant future the Army may likely fall back into its comfort zone and worry about what keeps it up at night: how to fight and win against the next major conventional threat. However, if the Army’s analytical community can develop compelling analysis to convince the senior leadership that it

must fully institutionalize stability operations, this may change. At a minimum, the community must provide the analytical rigor required for the senior leaders to evaluate force structure and operational options and pursue the best course for the Army and this nation.

Endnotes

¹ U.S. Department of the Army, *Stability Operations*, Field Manual 3-07 (Washington, DC: U.S. Department of the Army, October 6, 2008).

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⁴ Ibid.

⁵ Conrad C. Crane, *Landpower and Crises: Army Roles and Missions in Smaller-Scale Contingencies During the 1990's*, (Carlisle, PA: U.S. Army War College, Strategic Studies Institute, January 2001), 1, <http://www.strategicstudiesinstitute.army.mil/pdf/files/pub259.pdf> (accessed October 14, 2008).

⁶ Nadia Schadow, Charles Barry and Richard Lacquement, "A Return to the Army's Roots: Governance, Stabilization, and Reconstruction" in *The Future of the Army Profession*. 2nd ed. Don M. Snider and Lloyd J. Matthews (New York: McGraw-Hill Companies, Inc., 2005), 254.

⁷ Andrew F. Krepinevich, *An Army at the Crossroads: Strategy for the Long Haul*, (Washington, DC: Center for Strategic and Budgetary Assessments, 2008), 22, http://www.csbaonline.org/4Publications/PubLibrary/R.20081117.An_Army_At_The_Cro/R.20081117.An_Army_At_The_Cro.pdf (accessed November 4, 2008).

⁸ U.S. Department of the Army, *The Army Strategy*, August 22, 2008, in AKO portal - <https://www.us.army.mil/suite/doc/12684842> (accessed October 12, 2008).

⁹ Ibid, 12. The strategy document does not define 'stability operations' in contextual terms as FM 3-0, Operations. For example, *The Army Strategy* addresses stability operations as a sub-set of Irregular Warfare "Prevail in the War on Terror and Conduct Irregular Operations – Continuously conduct multiple, globally distributed irregular operations of varying duration, and surge to conduct a large scale, potentially long duration, irregular warfare campaign including counterinsurgency and security, stability, transition, and reconstruction operations.", 5-6 of *The Army Strategy*.

¹⁰ Ibid, 13. *The Army Strategy* states “The Army has chosen to establish the six new AC BCTs as IBCTs due to both the speed at which they can be built and their fungibility if the BCT force mix needs adjustment in the future. To enhance full spectrum enabling capabilities, new support designs such as the Maneuver Enhancement Brigade with an organic Tactical Combat Force offer particular utility in the irregular warfare environment.”, 13.

¹¹ Ibid, 12.

¹² Thomas Donnelly and Frederick W. Kagan, *Ground Truth: The Future of U.S. Land Power*, (Washington, DC: The AEI Press, 2008), 127.

¹³ Richard N. Haass, *Intervention: The Use of American Military Force in the Post-Cold War World*, (Washington, DC: Carnegie Endowment For International Peace, 1999), 7.

¹⁴ Andrew J. Bacevich, “The Petraeus Doctrine”, *Atlantic Monthly*, October 2008, 17.

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¹⁶ Peter Katel, “Rise in Counterinsurgency”, *CQ Researcher*, September 5, 2008, <http://www.soc.american.edu/docs/Counterinsurgency.pdf> (accessed January 21, 2008). For additional details in the Kennedy Administration’s goals with addressing unconventional threats, the reader should read Andrew Krepinevich, *The Revolution that Failed The Army and Vietnam* (Baltimore: The Johns Hopkins University Press, 1986), 27-55, from Dean Nosorog, *Chewing Sand*, (McGraw-Hill Primis Custom Publishing, 2005), 1-16.

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²⁴ Robert M. Gates, “A Balanced Strategy: Reprogramming The Pentagon For A New Age”, *Foreign Affairs*, (January 2009), <http://www.foreignaffairs.org/20090101faessay88103/robert-m-gates/how-to-reprogram-the-pentagon.html> (accessed December 6, 2008).

²⁵ Andrew C. Pavord, "Force Structure for Small Wars", May 13, 2008, http://smallwarsjournal.com/_mag/docs-temp/60-pavord.pdf (accessed November 2, 2008).

²⁶ Brian Watson, *Reshaping the Expeditionary Army to Win Decisively: The Case for Greater Stabilization Capacity in the Modular Force*, (Washington DC: Strategic Studies Institute, August 2005), 11.

²⁷ Gian P Gentile, "A (Slightly) Better War: A Narrative and Its Defects", *World Affairs* 171, no. 1 (Summer 2008): 61.

²⁸ Gian Gentile, "Let's Build an Army to Win *All Wars*", *Joint Forces Quarterly*, no. 52, (1st Quarter 2009): 27.

²⁹ Michael J. Mazarr, "The Folly of 'Asymmetric War,'" *Washington Quarterly* 31, no. 3 (Summer 2008): 35, www.twq.com/08summer/docs/08summer_mazarr.pdf, (accessed January 24, 2009).

³⁰ Phillip S. Meilinger, "American Military Culture and Strategy", *Joint Forces Quarterly*, no. 46, (3rd Quarter 2007): 85.

³¹ Haass, *Intervention: The Use of American Military Force in the Post-Cold War World*, 7.

³² Ibid, 7.

³³ Cantwell, "Nation-Building: A Joint Enterprise", *Parameters*, (Autumn 2007): 56.

³⁴ U.S. Department of Defense, *Military Support for Stability, Security, Transition, and Reconstruction (SSTR) Operations*, Department of Defense Directive 3000.05, (Washington, DC: November 28, 2005).

³⁵ U.S. Department of Defense, *Irregular Warfare (IW)*, Department of Defense Directive 3000.07, December 1, 2008.

³⁶ For a description of similarities and differences between Stability Operations with those of Irregular Warfare, the reader is invited to read *Military Support to Stabilization, Security, Transition, and Reconstruction Operations Joint Operational Concept (JOC)*, Version 2.0, December 2006, and the *Irregular Warfare (IW) Joint Operational Concept (JOC)*, Version 1.0, September 11, 2007.

³⁷ U.S. Department of Defense, *Irregular Warfare (IW)*, 8.

³⁸ Gates, "A Balanced Strategy: Reprogramming The Pentagon For A New Age".

³⁹ James Clancy and Chuck Crossett, "Measuring Effectiveness in Irregular Warfare", *Parameters*, (Summer 2007): 88.

⁴⁰ The definition, as written, was derived by the author with assistance from the Organization For Economic Co-operation and Development electronic library Glossary of Statistical Terms. See <http://stats.oecd.org/glossary/detail.asp?ID=6102>, (accessed February 14, 2009). For further reading on differing analytical methods related to military strategy, read

Richard L. Kugler, *Policy Analysis in National Security Affairs: New Methods for a New Era*, (Washington, DC: National Defense University, 2006).

⁴¹ Clancy, "Measuring Effectiveness in Irregular Warfare", 89.

⁴² Ibid, 90.

⁴³ The author experienced firsthand the lack of analytical tools when asked in October 2001 by senior USCENTCOM leaders what existing models could predict select outcomes may happen after the initial commencement of operations in Afghanistan. A range of estimates and outcomes were later briefed with the caveat that the analysis was done *without* the use of sophisticated models due to the fact they did not exist.

⁴⁴ Philipp Djang, "MAS President Transition", *Phalanx: The Bulletin of the Military Operations Research*, December 2002, http://www.mors.org/publications/phalanx/V35N4_Dec02.pdf, 3, (accessed November 15, 2008).

⁴⁵ During the 71st MORS Symposium at Marine Corps Base Quantico held June of 2003, there was a panel discussion aimed at discussing analytical issues for deployed analysts involved with joint operations. As stated in MORS Journal *Phalanx*, Vol. 36, No. 3, (The Bulletin of the Military Operations Research, September 2003), 14, <http://www.mors.org/publications/phalanx/v36n3.pdf>, "In order to provide analysts "in the field" the opportunity to share concerns with the MORS community, Group C also held a "Report from the Front" panel discussion on analysis issues from the combatant commanders' perspective. During this panel representatives from eight of the Combatant Commands - EUCOM, JFCOM, SOUTHCOM, CENTCOM, SOCOM, NORTHCOM, PACOM, and USFK – presented respective issues and concerns in their efforts to use analysis to support theater joint operations." The author was the panel member representing USCENTCOM whereby the panel addressed the issue of relevancy of combat models to the audience. Note: the author briefed three slides (unpublished) claiming the number of challenges facing deployed analysts.

⁴⁶ William F. Crane, "MORS Workshop: The Global War on Terrorism: Analytic Support, Tools and Metrics of Assessment, 30 November – 2 December 2004, Naval War College, Newport, Rhode Island", (MORS Report, 11 August 2005), <http://www.mors.org/publications/reports/2004-GWOT.pdf>, (accessed October 26, 2008). Also available via *Phalanx*, (The Bulletin of the Military Operations Research, March 2005), <http://www.mors.org/publications/phalanx/v38n1.pdf>, 1 – 6, (accessed December 7, 2008).

⁴⁷ John Borsi et al., "MORS Workshop: The Global War on Terrorism: Analytic Support, Tools and Metrics of Assessment", *Phalanx: The Bulletin of the Military Operations Research*, March 2005, <http://www.mors.org/publications/phalanx/v38n1.pdf>, 4, (accessed December 7, 2008).

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⁴⁹ Gregory Reuss and George Stone, "Agent-Based Models and Other Analytic Tools in Support of Stability Operations, 25-27 October 2005", (MORS Report, 15 February 2006),

http://www.mors.org/publications/reports/2005-ABM_Workshop.pdf, (accessed November 6, 2008).

⁵⁰ Reuss, "Agent-Based Models and Other Analytic Tools in Support of Stability Operations, 25-27 October 2005", 1.

⁵¹ Ibid, 7.

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⁵³ Donald Rumsfeld, *National Defense Strategy of The United States of America*, (Washington, DC: The Department of Defense, March 2005), 2-3.

⁵⁴ Donald Rumsfeld, *Quadrennial Defense Review Report*, (Washington, DC: The Department of Defense, February 6, 2006), 19.

⁵⁵ Dick, "Analysis for Non-Traditional Security Challenges: Methods and Tools, 21-23 February 2006", 1.

⁵⁶ Ibid, 2-3.

⁵⁷ Ibid, 7.

⁵⁸ U.S. Government Accounting Office, *Highlights of GAO-07-709, QUADRENNIAL DEFENSE REVIEW: Future Reviews Could Benefit from Improved Department of Defense Analyses and Changes to Legislative Requirements*, (Washington, DC: U.S. Government Accountability Office, September 2007), www.gao.gov/highlights/d07709high.pdf, (accessed November 6, 2008). For the full GAO Report, go to <http://www.gao.gov/new.items/d07709.pdf>.

⁵⁹ Ibid.

⁶⁰ Ibid.

⁶¹ Jay Persons, *Stability Operations Capability Gap Analysis*, Technical Report TRAC-F-TR-07-017, (Ft. Leavenworth, KS: US Army Training and Doctrine Command Analysis Center), January 23, 2007, Distribution limited to DoD components and DoD contractors only. TRAC defines 'capability gap as a mission or task that the Army does not have the units, personnel, equipment or training to accomplish.

⁶² Persons, *Stability Operations Capability Gap Analysis*, v.

⁶³ Kerry Lenninger, *Methodologies, Models, and Simulations Research for the Analysis of Stability Operations*, Technical Report TRAC-F-TR-07-0, (Ft. Leavenworth, KS: US Army Training and Doctrine Command Analysis Center), April 16, 2007. Distribution to authorized DoD components only.

⁶⁴ Lenninger, *Methodologies, Models, and Simulations Research for the Analysis of Stability Operations*, 1.

⁶⁵ Ibid, 3.

⁶⁶ Larry Larimer, *Irregular Warfare Methods, Modeling & Analysis Working Group (IW MmAWG) Final Report and Recommendations*, briefing slides, (Ft. Leavenworth, KS: US Army Training and Doctrine Command Analysis Center), May 7, 2008.

⁶⁷ Ibid, slides 7-9. The 160 decision issues came from senior Army and USMC leaders, US Department of State Representative in Afghanistan, Brigade Combat Team (BCT) level leaders with OIF/OEF experience, TRADOC integrated question list (31 issues from FY08 AC2DP), the TRAC Africa scenario, and various ongoing Army and USMC analytic studies. The 14 'decision issue' categories are: Battlespace awareness, C2 and networks, Fires, Protection, Sustainment, Movement and maneuver, Force effectiveness, Service/unit organization, Influencing the population, Joint, interagency/multinational, Partnering/engagement, Planning/campaign development, Threat, and Training.

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⁶⁹ U.S. Department of the Army, *Composite Risk Management*, Field Manual 5-17, (Washington, DC: U.S. Department of the Army, July, 2006). The study team used the exact risk assessment outline on pages I-8 to I-9 of FM 5-17.

⁷⁰ Larimer, *Irregular Warfare Methods, Modeling & Analysis Working Group (IW MmAWG) Final Report and Recommendations*, slide 21.

⁷¹ Ibid, slide 22.

⁷² Ibid, slide 25.

⁷³ Al Sweetzer, "MORS Workshop Outbrief: Improving Cooperation among Nations in Irregular Warfare Analysis, Overview December 11-13, 2007, Naval Postgraduate School, Monterey, CA", briefing slides, http://www.mors.org/meetings/ican_2007/ictor.htm, (accessed January 10, 2008).

⁷⁴ Larimer, *Irregular Warfare Methods, Modeling & Analysis Working Group (IW MmAWG) Final Report and Recommendations*, slide 27.

⁷⁵ Larimer, *Irregular Warfare Methods, Modeling & Analysis Working Group (IW MmAWG) Final Report and Recommendations*, slide 5. The author spent an entire day with Colonel Larimer discussing the modeling and analytical challenges facing the analytical community, as viewed from a Combatant Command HQ perspective, and was able to review and comment on the final report prior to release.

⁷⁶ U.S. Department of Defense, *Irregular Warfare (IW)*, 8.

⁷⁷ The example is an 'Analytic Capability Gap' identified in Larry Larimer, *Irregular Warfare Methods, Modeling & Analysis Working Group (IW MmAWG) Final Report and Recommendations*, briefing slides, Fort Leavenworth, KS, TRADOC Analysis Center, 7 May 2008, slide 29.

⁷⁸ U.S. Department of the Army, *Stability Operations*, Field Manual 3-07, Appendix D.

⁷⁹ Larimer, *Irregular Warfare Methods, Modeling & Analysis Working Group (IW MmAWG) Final Report and Recommendations*, slide 21.

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⁸¹ Lieutenant General Thomas Metz, “Keynote Address MORS Wargaming and Analysis Workshop”, October 16, 2007, slide6, http://www.mors.org/meetings/gaming_2007/briefs/metz.pdf (accessed December 4, 2008).

⁸² Clancy, “Measuring Effectiveness in Irregular Warfare”, 99.